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PAPERS

IN

CHEMISTRY.

No. I.

POTATOES.

The Thanks of the Society were voted to Mr. W. H. B. **WEBSTER**, *Carr Street, Ipswich, for the following Statement of the effect produced on Potatoes by Immersion in Ammoniacal Water, or in Brine.*

FEW articles have claimed more general attention than the potato; and our acquaintance with every state of it would seem to be so perfect as to preclude the necessity of any further research. Yet, I am not altogether without hope that the observations I have presumed to transmit may not be deemed irrelevant to the purposes of the Society of Arts. If potatoes are immersed for four or five days in ammoniated water, containing an ounce of the common liquor ammoniæ to a pint of water, they will, on removal, be found to have their vegetative principle greatly checked, or altogether destroyed; so that they may be preserved throughout the year, without the least deterioration of their general qualities. The temporary action of the ammonia in no way affects the potato beyond that of destroying its power of growth; if, however, any change is produced, it is rather beneficial than otherwise — somewhat improving the appearance and flavour of inferior potatoes, and giving them a mealiness they did not possess. The transient nature of the application removes any suspicion of injury from the material applied, and it is all lost by evaporation, so that not a trace remains behind : nor could the most fastidious ever detect that the potatoes had been immersed in ammonia — so volatile is its nature, so perfect its escape. In the improved state of horticulture there may seem to be no motive for the preservation of vegetables, because the supply is so abundant; but there are cases peculiarly suited to the mode I have ventured to recommend. The exportation of potatoes to foreign climates, chiefly within the tropics, is an object of importance; and, for the comfort of sailors, I know nothing in the way of diet greater than the luxury of a potato with their salt food. As a means of prolonging their enjoyments, and adding to the healthful diet of a sea-life, this mode may be adopted with advantage. The expense of immersion is very trifling, and they subsequently require to be spread in an airy situation to dry. I have used the potatoes, in conjunction with my friends, after ten months' keeping in a warm kitchen closet. The accompanying potatoes are a specimen, and forwarded for inspection. They were immersed in October 1831.

There is, however, another effect produced by the continued immersion of the potatoes in the ammoniacal water, viz. a consolidation of the starch and fibre, and the loss of the water of the potato. If the potatoes, instead of being removed in five days, are continued in the ammoniacal water for three weeks, the potato becomes tough and shrivelled while in the liquor, and when dried by exposure to the air assumes quite a new form, as evidenced by the specimens transmitted. The potato appears consolidated, and the qualities of the potato are greatly lost, for, on boiling, it assumes the appearance of sago or starch, yet still firm, and retaining its form. But if used in its dry and uncooked state, it has a mealy flavour, and the properties of corn.

There is no chemical change effected on the potato, but merely a mechanical consolidation and extraction of moisture; for precisely the same effect may be produced by immersing potatoes in strong solution of salt and water, taking great care to remove by subsequent ablution the whole of the salt; and this requires some time, and repeated changes of water. There is a small packet of potatoes consolidated by salt and water, and some of the meal produced therefrom. This mode may, perhaps, be found applicable to the conversion of refuse potatoes into food for cattle or pigs, being sweet, good, and wholesome, and very nutritious, dry diet. The mode is cheap, and within the reach of every one.

The hydrate of potato-starch forms a very tolerable tapioca for puddings, of which I forward a specimen. Potato-starch, mixed with a little lime, and boiled, produces a very hard, tough, semi-transparent mass; tasteless, insoluble, and possessing the properties of a strong paste and useful cement. There are, doubtless, other applications yet to be made from this useful root, and to shew us the exhaustless variety of nature's productions.

A. Aikin, Esq. W. H. B. Webster.
Secretary, &c.

The potatoes forwarded to the Society, as having been soaked for three weeks in the ammoniacal water, or in brine, were in slices, having been cut and dried after immersion. They were dense, brittle, not very hard, and broke down, when chewed, nearly in the same way as sea-biscuits do; the peculiar flavour of the potato was entirely gone, being superseded by that of a simple farinaceous substance, far from unpalatable, even without farther cooking.

In order to ascertain whether the change thus produced in the potato was not owing merely to slow drying, some potatoes were sliced, wrapped in paper, and put over the chimney-piece in a sitting-room where a fire was kept burning during the whole day. At the end of three weeks, the pieces, having become perfectly dry, were examined: they were considerably harder, and more tough, than the samples sent by Mr. Webster, and retained the strong, rank flavour of the raw potato.

No. II.

COMPARATIVE ANALYSIS OF BRITISH AND TURKEY OPIUM.

The Thanks of the Society were voted to Mr. T. N. R. MORSON, 19, Southampton Row, Russell Square, for the following Note respecting the Comparative Strength of British and Foreign Opium.

19, *Southampton Row,*
April 25*th*, 1834.

SIR,

I HAVE examined the English opium rewarded by the Society, and find it very inferior in strength to Turkey